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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,376	09/30/2003	John A. Hughes	240720US6YA	4362

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EXAMINER	
GRAMAGLIA, MAUREEN	

ART UNIT	PAPER NUMBER
1792	

NOTIFICATION DATE	DELIVERY MODE
02/13/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/673,376	HUGHES ET AL.	
	Examiner	Art Unit	
	Maureen Gramaglia	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2008 and 26 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) *2,4-10,12-17,19,21 and 23-39* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,11,18,20,22 and 40-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on 29 September 2008 and 26 November 2008 have been entered.

Claim Objections

2. **Claim 18 is objected to because of the following informalities:** There is no period at the end of Claim 18. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3, 11, 18, 20, 22, and 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,556,500 to Hasegawa et al. in view of U.S. Patent 7,227,097 to Kumar et al.

In regards to Claims 1, 18, 40, and 42, Hasegawa et al. teaches a semiconductor manufacturing system for processing a substrate using a plasma process, comprising: a plasma processing chamber 12 configured to facilitate said plasma process; a substrate

holder 14 coupled to the processing chamber and configured to support a substrate S to be processed by attracting and holding the substrate is provided; a gas distribution system 34 configured to introduce a process gas to said processing chamber; a plasma source (RF power source 46) coupled to said processing chamber and configured to generate a plasma in the processing chamber; and a processing element coupled to the processing chamber and the substrate holder; said processing element comprising a first substantially cylindrical ring shaped element 104 formed of a passive component and a second substantially cylindrical ring shaped element 106 formed of an active component configured to alter the chemistry of the processing when exposed to a plasma, said first and second elements 104 and 106 together forming a cylindrical ring shaped element 102; each of elements 104 and 106, and the cylindrical ring shaped element 102 formed by the elements 104 and 106 together configured to erode when exposed to a plasma process (see at least Column 9, Lines 36-47); each of said cylindrical elements 104, 106, and joint cylindrical element 102 having a first radially extending surface and a second radially extending surface opposite the first radially extending surface, wherein an inside diameter of each cylindrical unit (104, 106, or 102) forms an opening for disposition of the cylindrical unit around a substrate position in the semiconductor manufacturing system and the second radially extending surface is a substantially planar surface for disposition on a substrate holder in the semiconductor manufacturing system. (See at least Figure 1; Column 1, Lines 6-8; Column 3, Line 54 - Column 4, Line 3; Column 4, Lines 21-45; Column 6, Line 5 - Column 7, Line 8; Column 9, Lines 36-47)

Hasegawa et al. teaches an alternative embodiment (Figure 8) of a semiconductor manufacturing system for processing a substrate using a plasma process, comprising: a plasma processing chamber 204 configured to facilitate said plasma process; a substrate holder 208 coupled to the processing chamber and configured to support a substrate S to be processed by attracting and holding the substrate is provided; a gas distribution system 205 configured to introduce a process gas to said processing chamber; a plasma source (magnet 207; RF power source 224) coupled to said processing chamber and configured to generate a plasma in the processing chamber; and a processing element coupled to the processing chamber and the substrate holder; said processing element comprising a cylindrical ring shaped element 208d comprising a passive component and configured to erode when exposed to a plasma process (see at least Column 9, Lines 36-47, which explains that a ring will erode when exposed to the plasma; and Column 10, Line 65 - Column 11, Line 2); said cylindrical element 208d having a first radially extending surface and a second radially extending surface opposite the first radially extending surface, wherein an inside diameter of the cylindrical unit 208d forms an opening for disposition of the cylindrical unit around a substrate position in the semiconductor manufacturing system and the second radially extending surface is a substantially planar surface for disposition on a substrate holder in the semiconductor manufacturing system. (See at least Figure 8; Column 1, Lines 6-8; Column 9, Lines 36-47; Column 10, Line 15 - Column 11, Line 52)

In regards to Claims 1, 18, 40, and 42, Hasegawa et al. does not expressly teach in either of the embodiment of Figure 1 or the embodiment of Figure 8 that a cylindrical

element configured to erode when exposed to the plasma can comprise a cylindrical passive polymeric component *and* an active component, wherein the passive polymeric component is configured to erode when exposed to the plasma and *the active component is included as a part of the passive component* and configured to alter the chemistry of the processing when exposed to the plasma. In regards to Claims 3, 11, 20, and 22, Hasegawa et al. further does not teach wherein the active component comprises a distribution of solid particles encapsulated within the passive component.

Kumar et al. teaches a processing element for a plasma processing system (Column 3, Lines 18-20), comprising: a passive polymeric component (*a passive plasma catalyst…capable of inducing a plasma by deforming a local electric field*, Column 9, Lines 2-11, which can be *an electrically conductive polymer* or *a polymer nanocomposite*, Column 10, Lines 3-8) that can have various shapes including that of a cylindrical ring (*annular*; Column 10, Lines 50-53) and is configured to erode when exposed to a plasma process in the plasma processing system (it is *consumed by the plasma*; ex. Column 11, Lines 37-43); and an active component included as a part of said passive component and configured to alter the chemistry of the processing when exposed to the plasma process (*an additive [that] can include any material that a user wishes to add to the plasma*, such as *a dopant* or *a precursor material that, upon decomposition, can form the dopant*; Column 11, Lines 1-17). Kumar et al. teaches that the active component can comprise a distribution of solid particles (*the additive*) encapsulated within the passive component *(the passive plasma catalyst*). (Column 11, Lines 1-54; Figure 3)

In regards to Claims 1, 3, 11, 18, 20, 22, 40, and 42, it would have been obvious to one of ordinary skill in the art to modify the embodiment of either Figure 1 or Figure 8 of Hasegawa et al. to substitute a cylindrical ring-shaped element comprising a passive polymeric component, and an active component comprising a distribution of solid particles encapsulated within the passive compornent, the active component configured to alter the chemistry of the processing when exposed to the plasma process, as taught by Kumar et al., for any of the cylindrical ring-shaped elements 104 and/or 106 of Figure 1, or the entire cylindrical ring-shaped element 102 formed by elements 104 and 106, and/or the cylindrical ring-shaped element 208d of Figure 8 of Hasegawa et al. The motivation for making such a modification, as taught by Kumar et al. (see at least Column 11, Lines 1-54), would have been to allow for the delivery of any desirable additive that a user wishes to add to the plasma, including a plasma catalyst or dopant.

In regards to Claims 41 and 43, as discussed above in regards to Claims 1 and 18, the passive polymeric component taught by the combination of Hasegawa et al. and Kumar et al. is disposed on a substrate support, in which case said polymeric component has a plasma-exposed surface and a protected surface placed in contact with the substrate holder. The plasma-exposed surface would be inherently structurally capable of developing a greater surface area than the protected opposite surface, based on the pattern of erosion of the passive polymeric component caused by a particular plasma process performed in the manufacturing system. The recitation in Claims 41 and 43 that the plasma-exposed surface has a greater area than the surface in contact with a substrate holder has been interpreted as a recitation of intended use,

since the support for this claim limitation that Applicant has identified in the original disclosure (ex. Figure 7D) illustrates that the plasma-exposed surface of the inventive component only develops a greater surface area through plasma processing and erosion. It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). Also, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

Response to Arguments

5. Applicant's arguments, see pages 11-3 of the Remarks filed 29 September 2008, with respect to the rejection(s) of claim(s) 1, 3, 11, 40, and 41 under 35 U.S.C. 102(e) as anticipated by Kumar et al. have been fully considered and, in view of the amendment to Claim 1 to recite further details of the cylindrical unit to be sized so as to be capable of disposition on a substrate holder and around a substrate position in a semiconductor manufacturing system, are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Hasegawa et al. in view of Kumar et al.

6. Applicant's remaining arguments filed 29 September 2008 have been fully considered but they are not persuasive.

At the outset, it is noted that the rejection under 35 U.S.C. 103(a) of the pending claims has been modified to refer to Hasegawa et al. as the primary reference and to Kumar et al. as the secondary reference, in order to more clearly and logically set forth the grounds for showing the obviousness of the claimed invention.

Specifically, in regards to Applicant's arguments against the teachings of Hasegawa, these arguments are not persuasive. It is noted that while Hasegawa was previously overcome as an anticipatory reference, the teachings of Hasegawa are now applied in combination with Kumar et al., and still render obvious the claimed invention. Specifically in regards to Applicant's argument that Hasegawa teaches away from providing a single focus ring, this argument is not persuasive. Examiner recognizes that Hasegawa teaches certain advantages in providing separate focus rings, as described in the passage cited by Applicant. However, Hasegawa additionally teaches embodiments comprising only a single focus ring, for example the embodiment of Figure 8. Thus Hasegawa cannot be considered to teach away from providing only a single focus ring around the substrate. Additionally, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In the instant case, Examiner maintains that one of ordinary skill in the art, taking the combined teachings of Hasegawa and Kumar into consideration, would have found it obvious, with a

reasonable expectation of success in obtaining the predictable and desirable result of releasing the active component of Kumar by erosion of the passive component of Kumar, to replace one *or* both of the focus rings 104, 106 of Figure 1 taught by Hasegawa *or* the focus ring 208d of Figure 8 taught by Hasegawa with the ring comprising an active material embedded in a passive material as taught by Kumar.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen Gramaglia whose telephone number is (571)272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Maureen Gramaglia/
Examiner, Art Unit 1792

/Parviz Hassanzadeh/
Supervisory Patent Examiner, Art Unit 1792